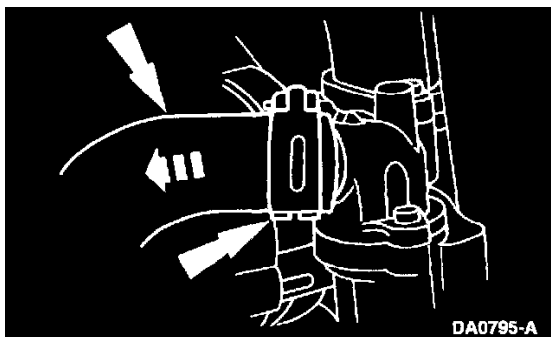


## Intake Manifold: Service and Repair

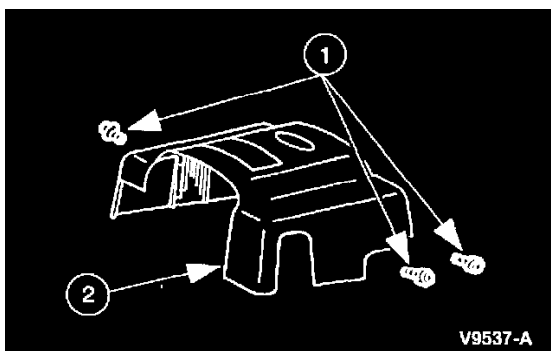
### Removal

**WARNING:** Do not smoke or carry lighted tobacco or open flame of any type when working on or near any fuel-related components. Highly flammable mixtures are always present and can be ignited. Failure to follow these instructions may result in personal injury.

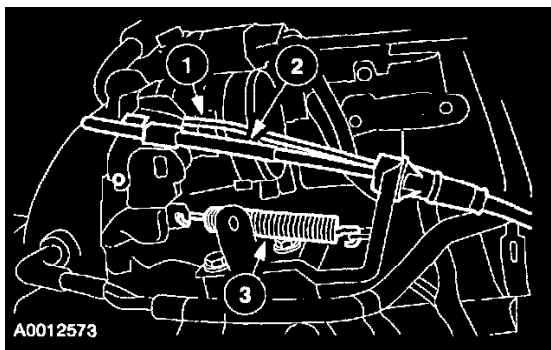
1. Disconnect the battery ground cable.
2. Relieve the fuel system pressure.
3. Drain the engine cooling system.
4. Remove the Engine Air Cleaner (ACL) and the air cleaner outlet tube.



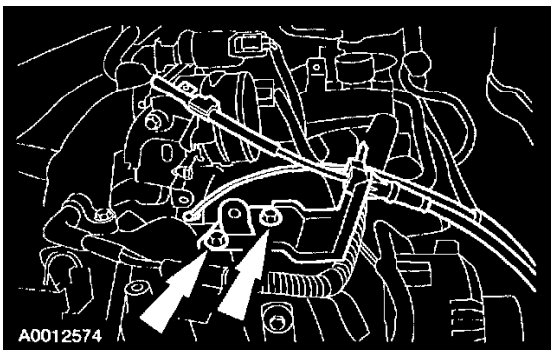
5. Compress and slide the hose clamp and disconnect the upper radiator hose.



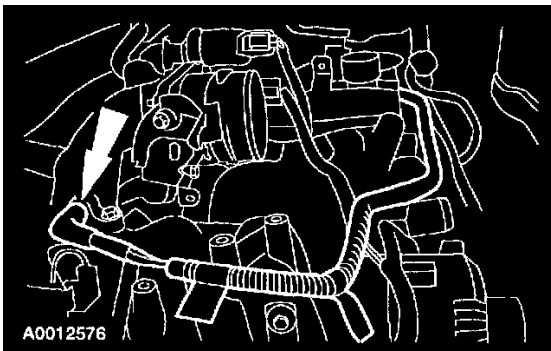
6. Remove the accelerator cable snow shield.
  - 1 Remove the bolts.
  - 2 Remove the accelerator cable snow shield.



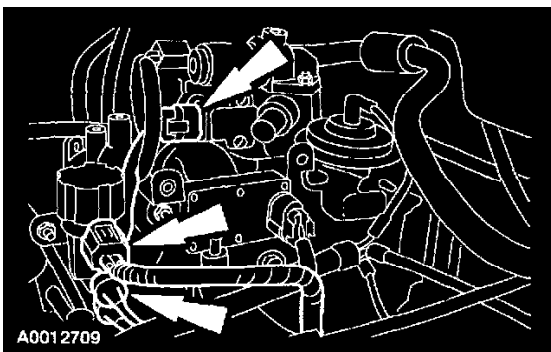
7. Disconnect the throttle body cam.
  - 1 Disconnect the accelerator cable.
  - 2 Disconnect the speed control actuator cable.
  - 3 Remove the accelerator return spring.



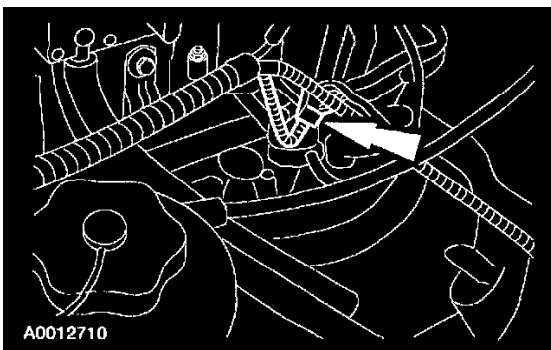
8. Remove the accelerator cable bracket bolts and position the bracket and cables aside.



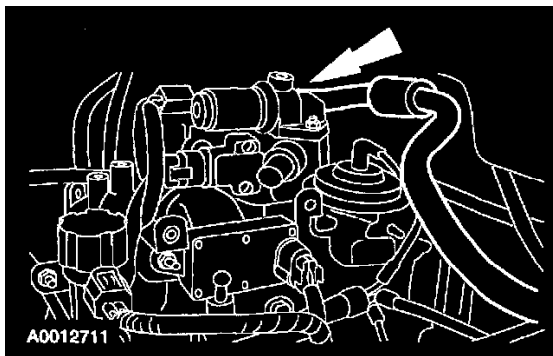
9. Disconnect the main vacuum harness.



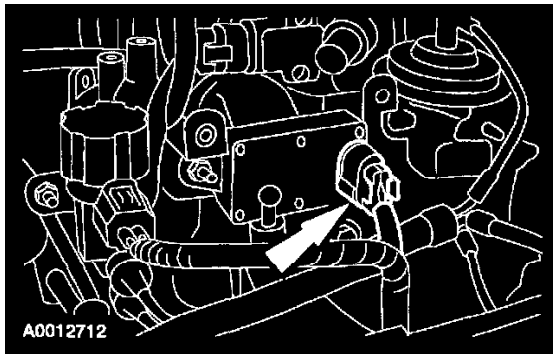
10. Disconnect the throttle position sensor and engine vacuum regulator connectors.



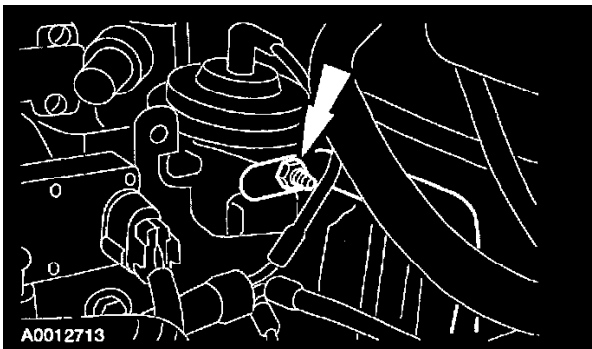
11. Disconnect the fuel pressure regulator vacuum line.



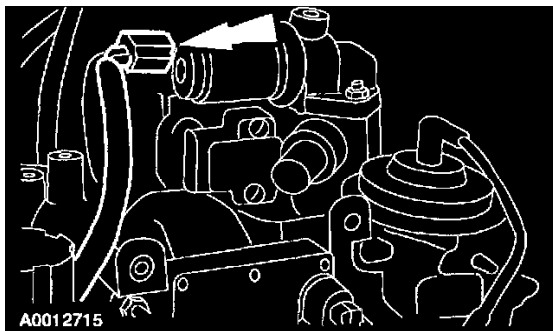
12. Disconnect the vapor management valve vacuum line.



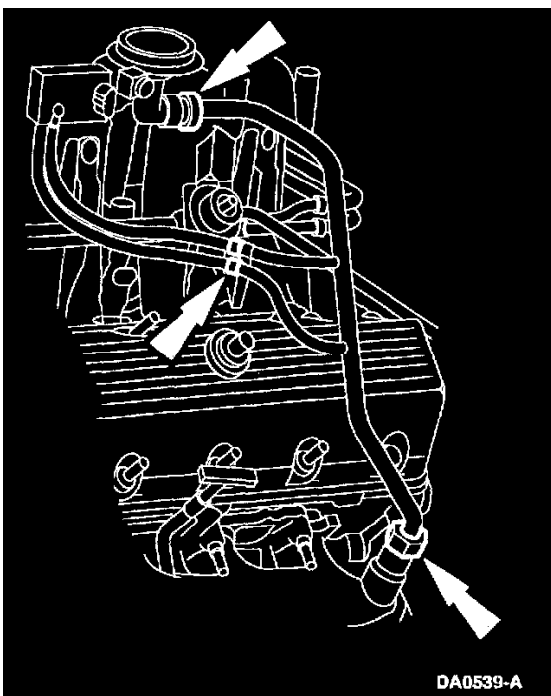
13. Disconnect the differential pressure feedback EGR connector.



14. Remove the nut and disconnect the brake booster vacuum line and bracket.  
15. Disconnect the fuel lines.

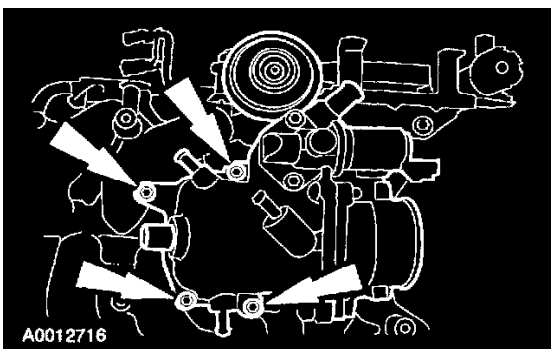


16. Disconnect the idle air control motor electrical connector.

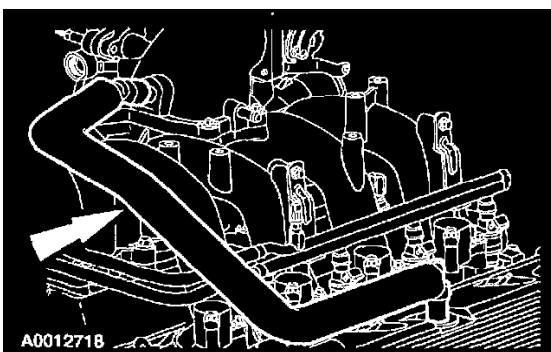


17. Position the EGR valve to exhaust manifold tube aside.

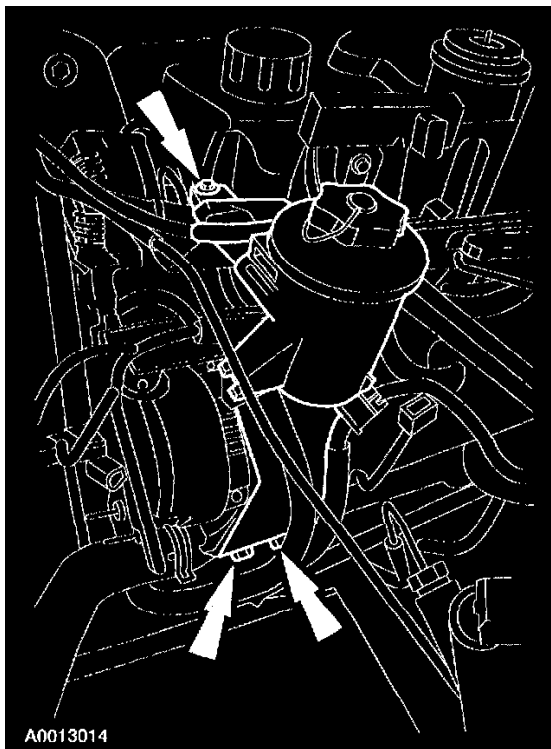
- Disconnect the upper fitting.
- Loosen the lower fitting.
- Disconnect the two vacuum lines.
- Position the tube aside.



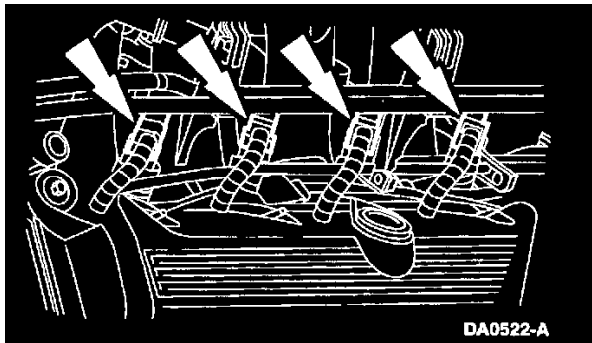
18. Remove the four bolts and remove the throttle body adapter.



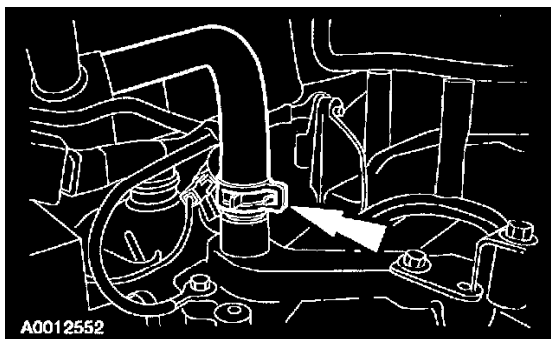
19. Disconnect and remove the Positive Crankcase Ventilation (PCV) hose.



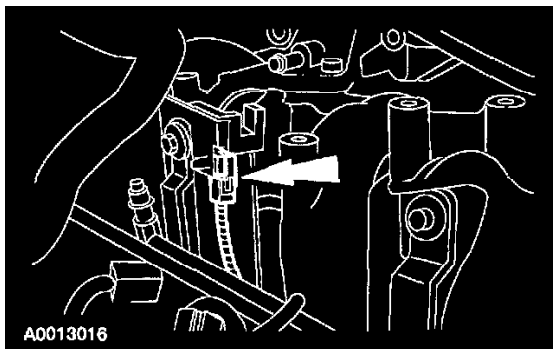
20. Position the power steering reservoir aside.
- Remove the upper bolt.
  - Remove the lower bolts.
  - Position the reservoir aside.



21. Disconnect the eight fuel injectors.
22. Disconnect and remove the eight ignition coils.
23. Remove the generator.

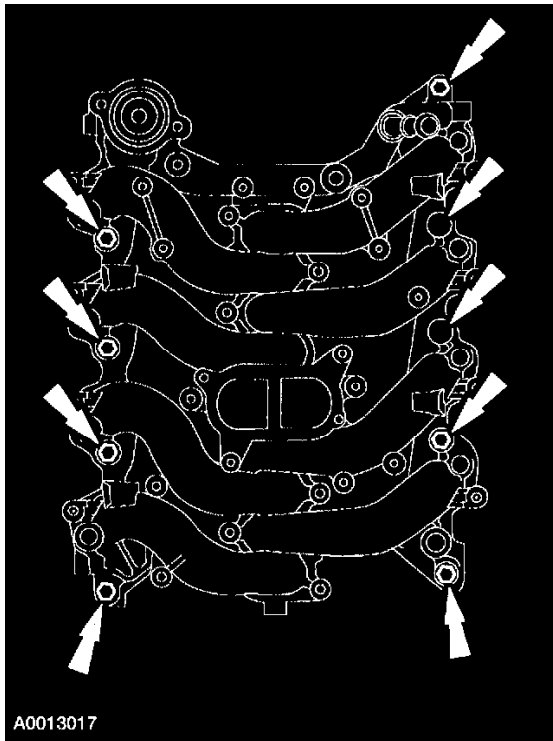


24. Disconnect the heater hose.



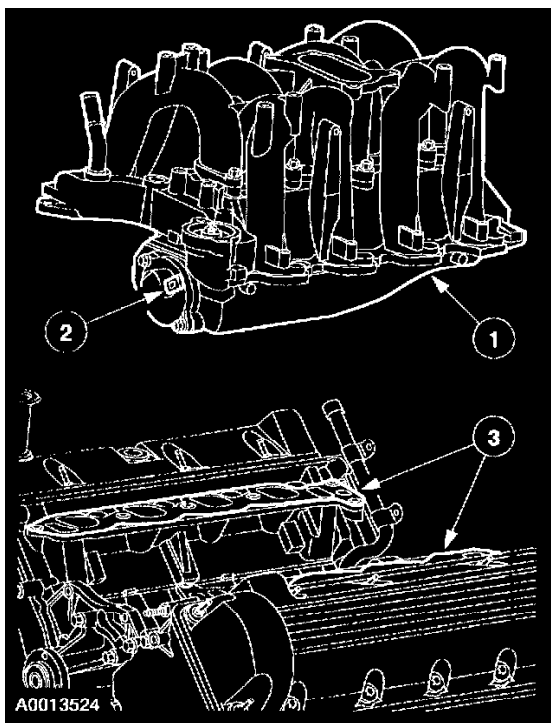
A0013016

- 25. Disconnect the two radio interference capacitors.
- 26. Remove the water thermostat.



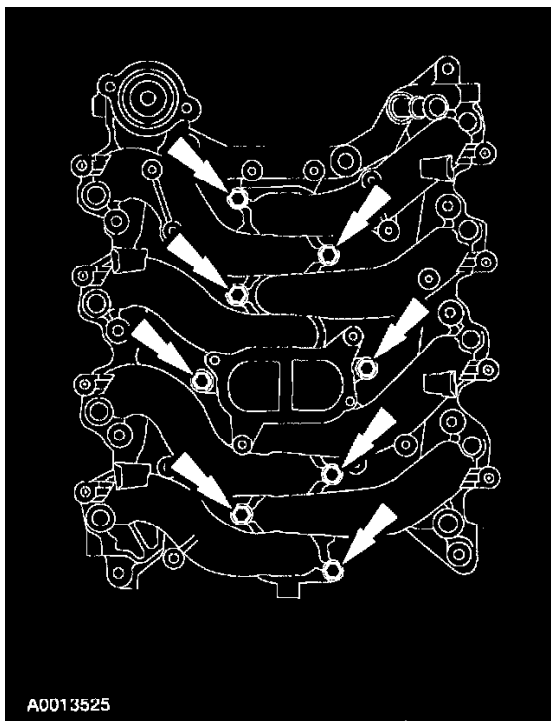
A0013017

- 27. Remove the nine bolts.

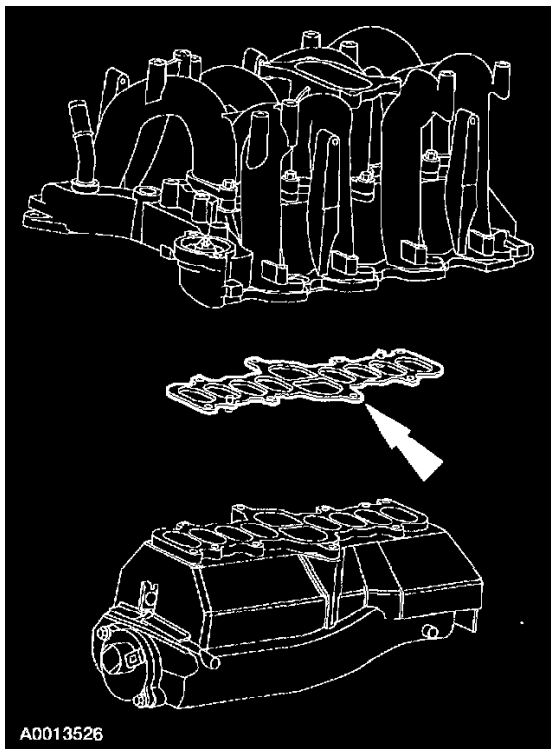


28. Remove the upper intake manifold.

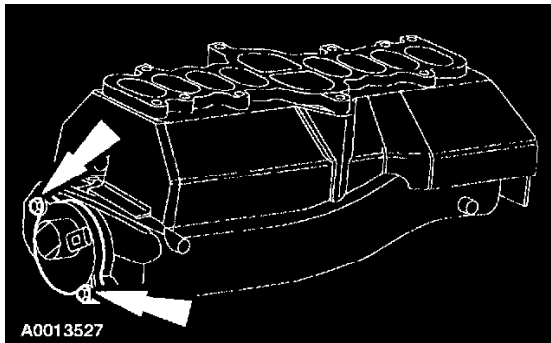
- 1 Lift the intake manifold.
- 2 Disconnect the intake manifold tuning valve connector.
- 3 Remove the intake manifold and discard the gaskets.



29. Remove the bolts.



30. Separate the upper and lower intake manifolds and discard the gasket.

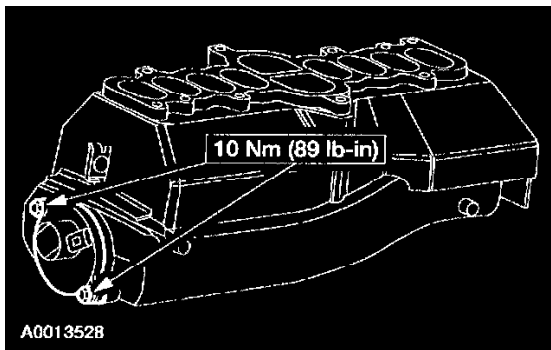


31. Remove the bolts and the intake manifold tuning valve.

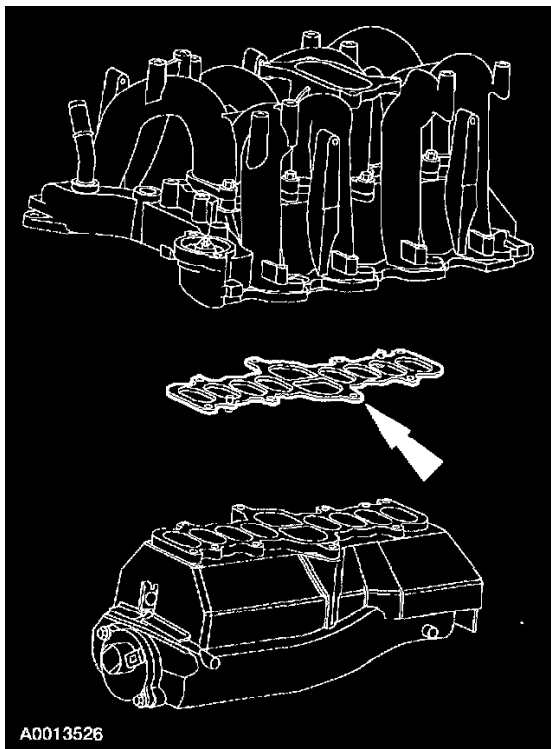
### Installation

1. **CAUTION:** Do not use metal scrapers, power abrasive discs or any abrasive means to clean the sealing surfaces, these tools cause scratches and gouges that make leak paths. Use a plastic scraper only.

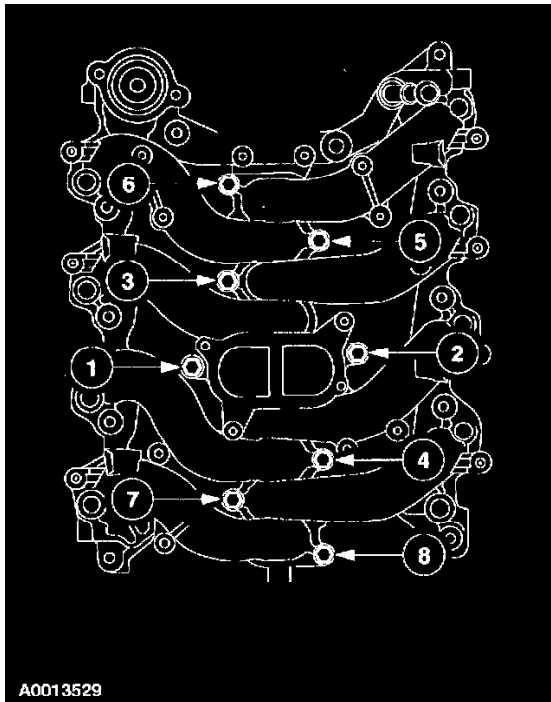
Clean all the sealing surfaces.



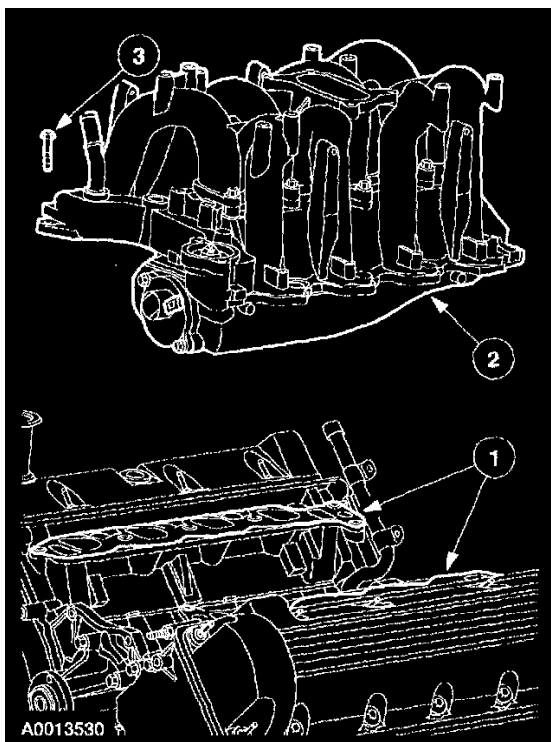
2. Position the intake manifold tuning valve and install the bolts.



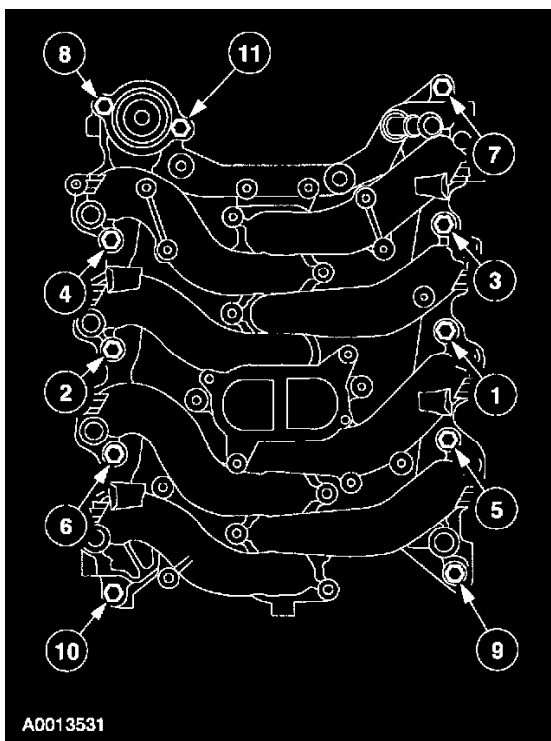
3. Position a new gasket and the upper intake manifold on the lower intake manifold.



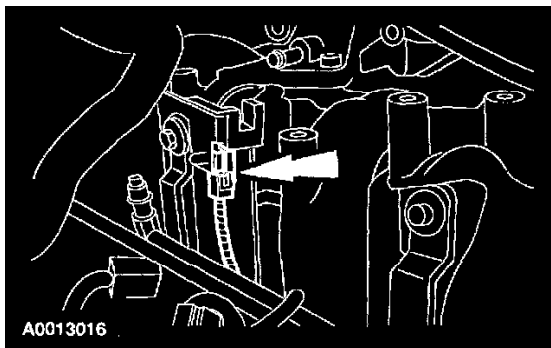
4. Install the bolts and tighten in two stages in the sequence shown.
  - Stage 1: Tighten to **2 Nm (18 inch lbs.)**.
  - Stage 2: Tighten to **10 Nm (89 inch lbs.)**.



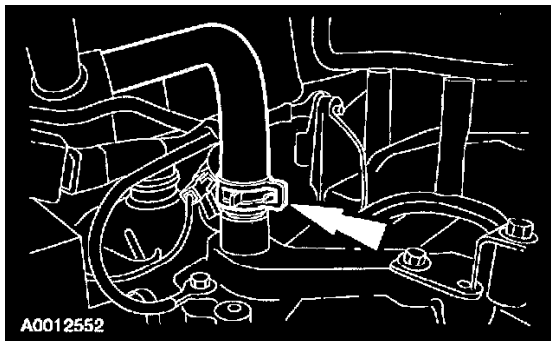
5. Install the upper intake manifold.
  - 1 Position the new intake manifold gaskets.
  - 2 Position the upper intake manifold.
  - 3 Loosely install nine bolts.
6. Connect the intake manifold tuning valve electrical connector.
7. Install the water thermostat.



8. Tighten the 11 bolts in two stages in the sequence shown.
  - Stage 1: Tighten to **2 Nm (18 inch lbs.)**.
  - Stage 2: Tighten to **10 Nm (89 inch lbs.)**.



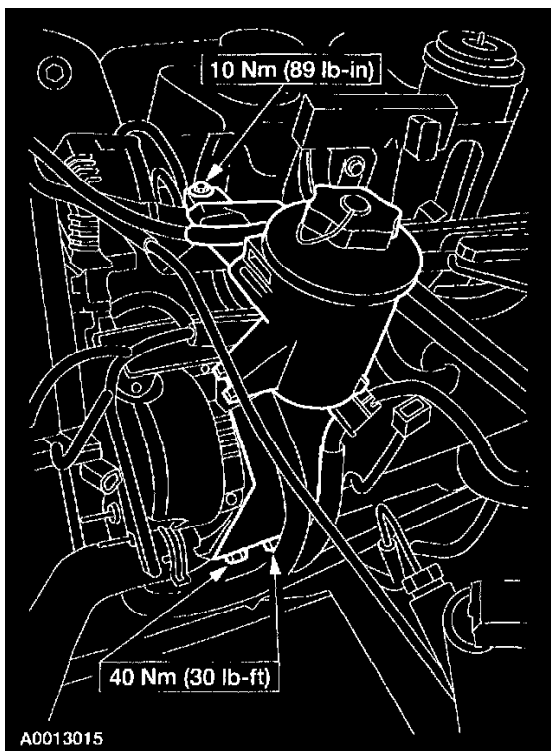
9. Connect the two radio ignition interference capacitor electrical connectors.



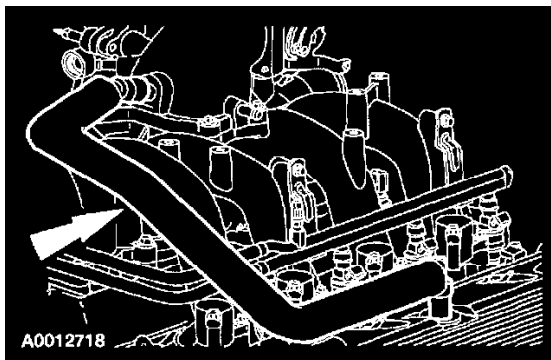
10. Connect the heater hose.
11. Install the generator.
12. Install and connect eight ignition coils.



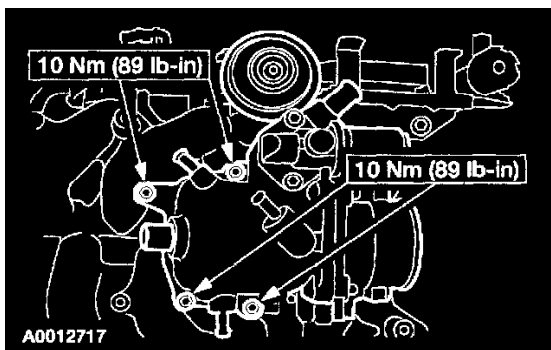
13. Connect the eight fuel injector electrical connectors.



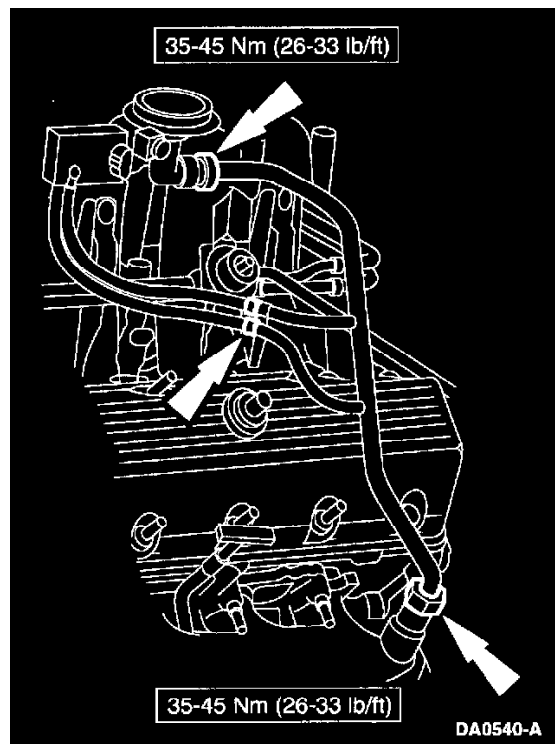
14. Install the power steering reservoir.
- Position the reservoir.
  - Install the two lower bolts.
  - Install the upper bolt.



15. Install the PCV hose.

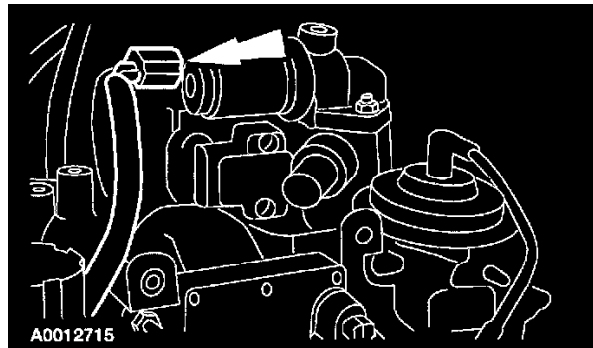


16. Install the throttle body adapter and the four bolts.



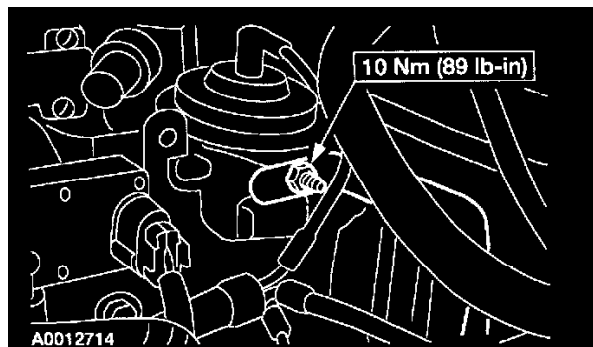
17. Install the EGR valve to exhaust manifold tube.

- Hand-tighten the fittings.
- Tighten the upper fitting.
- Tighten the lower fitting.
- Connect the two vacuum hoses.

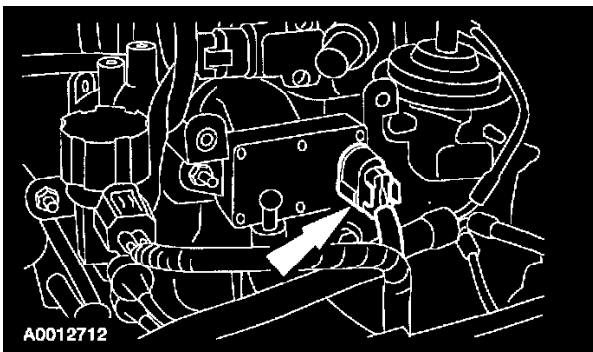


18. Connect the idle air control motor.

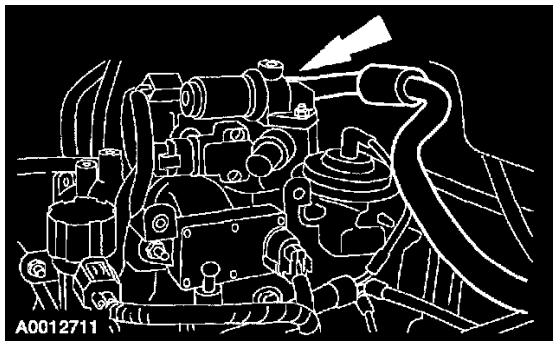
19. Connect the fuel lines.



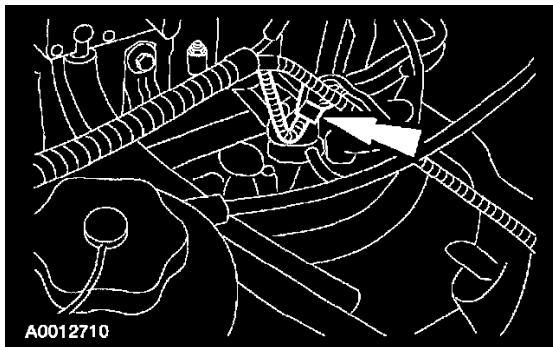
20. Connect the brake booster vacuum line and bracket and install the nut.



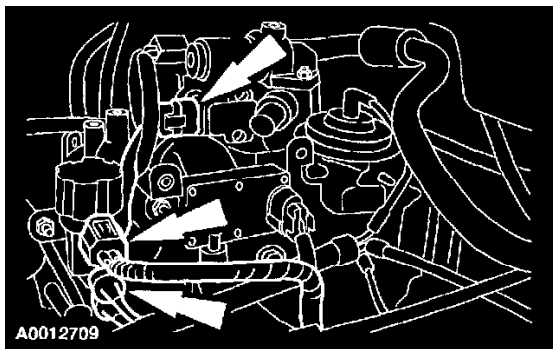
21. Connect the differential pressure feedback EGR connections.



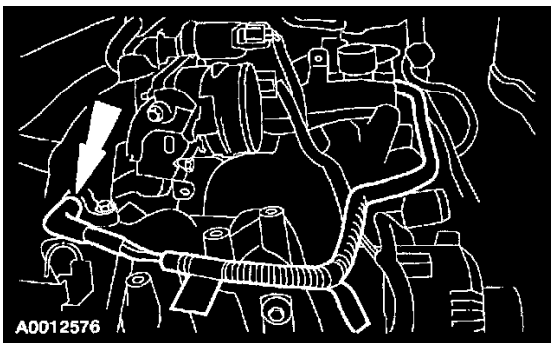
22. Connect the vapor management valve vacuum line.



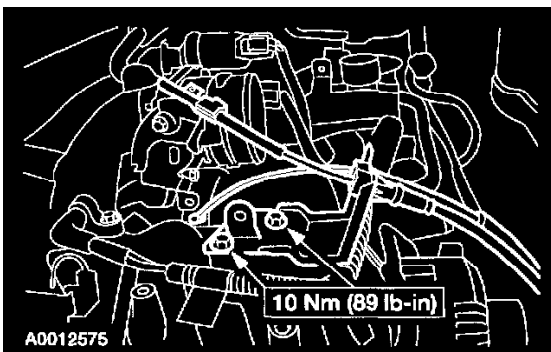
23. Connect the fuel pressure regulator vacuum line.



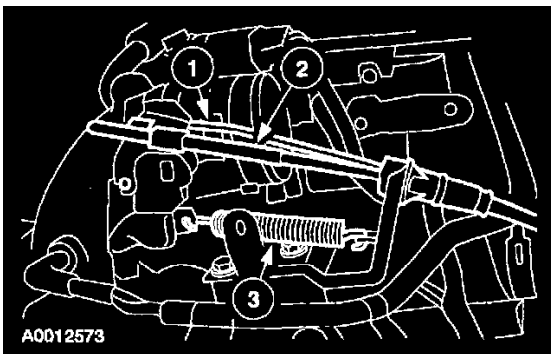
24. Connect the throttle position sensor connector and the engine vacuum regulator connector.



25. Connect the main vacuum harness.

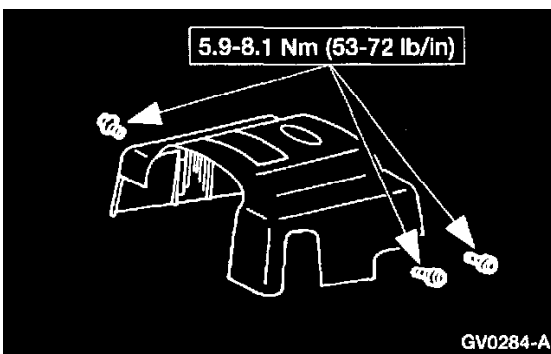


26. Install the accelerator cable bracket and the bolts.

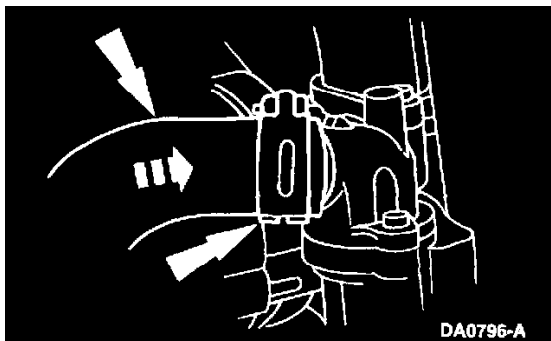


27. Connect the throttle body cam.

- 1 Connect the accelerator cable.
- 2 Connect the speed control actuator cable.
- 3 Install the throttle return spring.



28. Install the accelerator cable snow shield and the bolts.



29. Connect the upper radiator hose and position the clamp.
30. Install the engine air cleaner and the air cleaner outlet tube.
31. Connect the battery ground cable.
32. Fill and bleed the engine cooling system.